

Mr. Michael T. Davis  
Algebra II Delta & Eta

Exponential Functions Unit III 2<sup>nd</sup> half  
Quiz 1 Practice  
March 11, 2015

Name: \_\_\_\_\_

1. Given an exponential function  $f(x) = a(b)^x$ , what are the values that b can never be, i.e. what are the restrictions on b?
2. A zombie bacteria strain will double in size every 15 minutes. If a person is infected with 30 bacteria and it takes about 122,880 bacteria for a person to become a zombie, how long will it take for a person to mutate into a zombie? Write a formula to represent this.
3. Determine an equation for the exponential function  $f(x) = a(b)^x$  with ordered pairs (0,6) & (1,3)
4. A radioactive isotope decays in such a way that after every 5,000 years has passed, there remains one-half of the isotope. If there are initially 2,240 grams of the isotope, then how many grams will be present after 40,000 years?
5. Determine an equation for the exponential function  $f(x) = a(b)^x$  with ordered pairs (1,3) & (2,6)

6. During a free fall, a skydiver falls 16 feet in the first second, 48 feet in the 2<sup>nd</sup> second, and 80 feet in the third second. If she continues to fall at this rate, how many feet will she fall during the 9<sup>th</sup> second?
7. Determine an equation for the exponential function  $f(x) = a(b)^x$  with ordered pairs (1,32) & (6,1)
8. During a free fall, a skydiver falls 16 feet in the first second, 48 feet in the 2<sup>nd</sup> second, and 80 feet in the third second. If she continues to fall at this rate, how many feet will she fall during the first nine seconds?
9. Does the sequence  $100, 20, 4, \frac{4}{5}, \frac{4}{25}, \dots$  represent an exponential function? If so, explain why and then determine an equation for the function.
10. Determine an equation for the exponential function  $f(x) = a(b)^x$  with ordered pairs  $(1, 1000)$  &  $(5, \frac{1}{10})$

11. A colony of bacteria began with 80. The population grows at a rate of 30% every 20 minutes. How many will there be in 4 hours?

12. You invest \$2,000 in a simple interest bearing savings account for 18 years. The annual interest rate is 5%. What is the future value of your investment in 18 years?

13. A table of values for an exponential function is shown. Fill in all the missing x-values and corresponding y-values.

X	0	1	2	3	4	5	6
Y		25		16			

14. A table of values for an exponential function is shown. Fill in all the missing x-values and corresponding y-values.

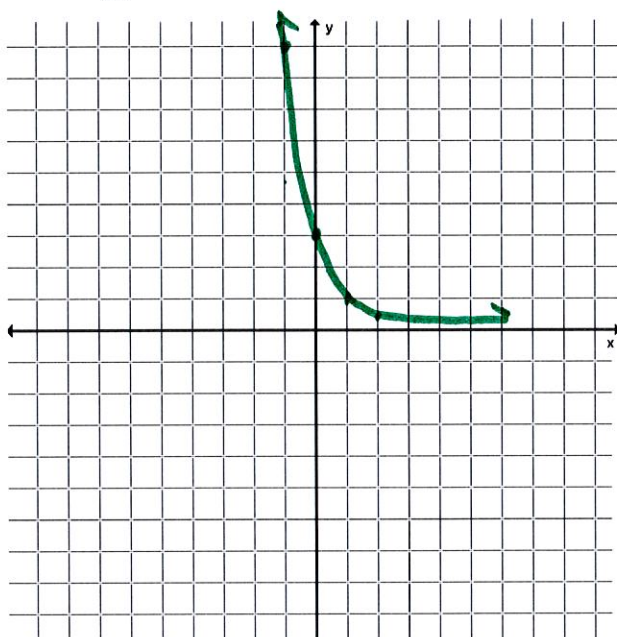
X	0	1	2	3	4	5	6
Y		0.005				50	

15. You arrive on an island and find 1,215 pairs of bunnies. Four months ago, there were 15 pairs of bunnies. How fast are the bunnies reproducing?

16. Match the graph with the information given.

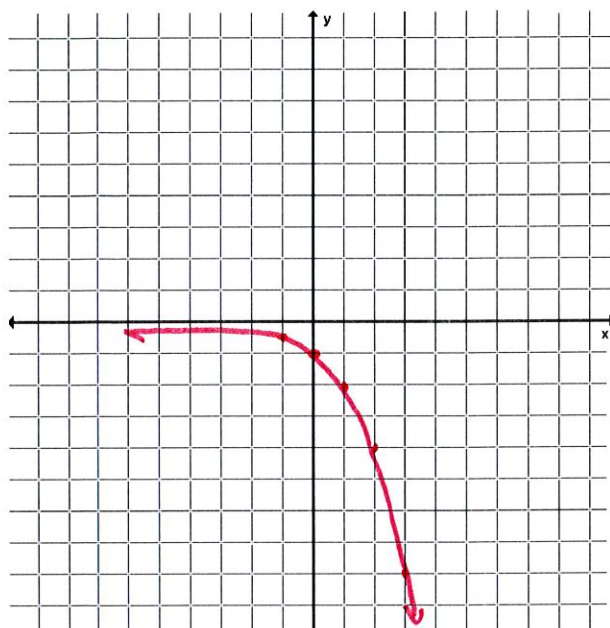
- I.  $f(x) = a(b)^x$ , where  $a > 0$  &  $b > 1$
- II.  $f(x) = a(b)^x$ , where  $a < 0$  &  $b > 1$
- III.  $f(x) = a(b)^x$ , where  $a > 0$  &  $0 < b < 1$
- IV.  $f(x) = a(b)^x$ , where  $a < 0$  &  $0 < b < 1$

A.



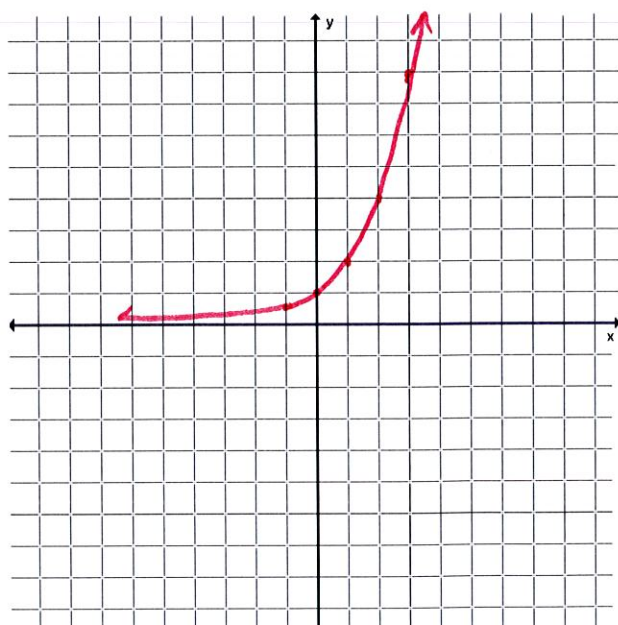
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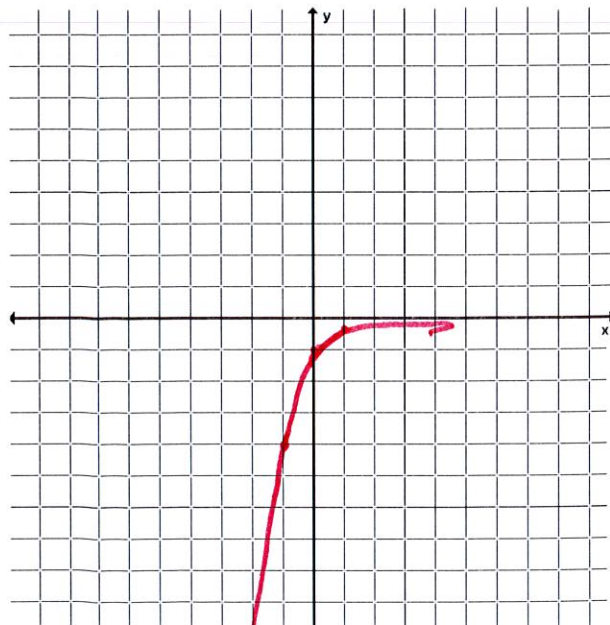
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